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EXAMINER BAREFORD, KATHERINE A				
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**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

# Office Action Summary

**Application No.**

10/576,658

**Applicant(s)**

KAWAMURA ET AL.

**Examiner**

Katherine A. Bareford

**Art Unit**

1792

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-4 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-4 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
  3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SF 298)  
Paper No(s)/Mail Date 4/20/06
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_

### DETAILED ACTION

1. Claims 1-4 are pending for examination.

#### *Claim Objections*

2. Claims 1 and 3 are objected to because of the following informalities: (1) in claim 1, line 1, "inkjet, for a drawing" should be "an inkjet process, for drawing a" for grammatical clarity as to what is claimed. (2) in claim 3, line 3, "used" should be "used to draw the wiring pattern" for grammatical clarity as to what is meant by "used".

Appropriate correction is required.

#### *Claim Rejections - 35 USC § 103*

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not

commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

5. Claims 1-4 are rejected under 35 U.S.C. 103(a) as being unpatentable over Japan 2000-204479 (hereinafter '479) in view of Korea 2000-0076067 (hereinafter '067).

'479 teaches that it is known to draw a wiring pattern on a substrate. Paragraphs [0001]–[0002], [0009] and [0044]–[0047]. The process includes drawing the desired metal wiring pattern on a substrate by an inkjet process, where a composition containing a silane coupling agent is applied to the substrate in a pattern. Paragraph [0044]. The substrate with the coated silane coupling agent is immersed in activator solution. Paragraphs [0045] and [0026]–[0027] (using palladium chloride system, for example, to activate for chemical plating.). Then chemical plating of the substrate with a metal occurs. Paragraph [0046]. The composition of silane is in a solution to be plated by the ink jet printer, thus forming an “ink” of the composition. See paragraph [0044] (composition in an “ink tank”). '479 teaches that an amino-based silane is used, but that other silane coupling agents can be used as well. Paragraph [0023].

'479 teaches all the features of these claims except that (1) an azole-based silane coupling agent, such as imidazolesilane, is used and (2) that electroless plating is performed over the substrate (claim 4) as the “chemical plating”.

However, '067 teaches providing a silane based coupling agent composition on a substrate, followed by treatment with a noble metal (such as palladium ion) solution as

an activator solution to prepare the substrate for plating, followed by chemical plating, including electroless plating, to provide a metal coating (abstract and page 4, second, third and fourth full paragraphs). '067 teaches that the silane coupling agent is desirably in the form of an azole-based silane coupling agent, such as an imidazolesilane, from the reaction of the silane and an imidazole (see abstract and page 3). This silane based coupling agent can desirably be dissolved in a desirable solvent such as water as compared to an amino-silane (see page 2, background art section, and paragraphs bridging pages 3-4).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify '479 to use an azole-based silane, such as an imidazolesilane, as the silane coupling agent as suggested by '067 with an expectation of desirable activation results, as '479 teaches to use a silane based coupling agent, exemplifying but not limited to amino-based silane coupling agents, and '067 teaches that when using silane based coupling agents for a similar plating process it is desirable to use an azole-based silane, such as an imidazolesilane, as the silane coupling agent instead for better dissolvability. It would further have been obvious to modify '479 to provide the chemical plating in the form of electroless plating as suggested by '067 to provide a desirable plating on the substrate, because '479 teaches to provide chemical plating of metal over the silane coupling agent layer and activator layer, and '067 teaches that when performing chemical plating of metal over a silane coupling agent

layer and activator layer, it is desirable to provide the chemical plating in the form of electroless plating.

### *Double Patenting*

6. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the “right to exclude” granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

7. Claims 1-4 are rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-14 of U.S. Patent No. 6,780,467 (‘467) in view of Japan 2000-204479 (hereinafter ‘479).

The claims of ‘467 provide a teaching of a method of electroless plating where an azole-based silane coupling agent, such as an imidazole-silane, containing material is applied to a substrate followed by electroless plating (claims 1, 3) (the Examiner notes

that the immersion in activator solution step of present claim 4 is optional) and a pretreatment agent (composition) with the azole-based silane coupling agent is also provided (claims 9-11). '467 does not provide that the composition is an inkjet printing ink, applied by inkjet printing to form a wiring pattern; but '479 provides that it is known to draw a wiring pattern on a on a substrate. Paragraphs [0001]–[0002], [0009] and [0044]–[0047]. The process includes drawing the desired metal wiring pattern on a substrate by an inkjet process, where a composition containing a silane coupling agent is applied to the substrate in a pattern. Paragraph [0044]. The substrate with the coated silane coupling agent is immersed in activator solution. Paragraphs [0045] and [0026]–[0027] (using palladium chloride system, for example, to activate for chemical plating.). Then chemical plating of the substrate with a metal occurs. Paragraph [0046]. The composition of silane is in a solution to be plated by the ink jet printer, thus forming an “ink” of the composition. See paragraph [0044] (composition in an “ink tank”). '479 teaches that an amino-based silane is used, but that other silane coupling agents can be used as well. Paragraph [0023]. It would have been obvious to modify '467 to provide that the silane based coupling agent is provided in the form of an ink jet ink and applied to form a wiring pattern by inkjet printing to allow for desirable use of the material when forming metal wiring patterns as described by '479 as being a desirable use for silane coupling agents applied as a pretreatment before metal overplating.

8. Claims 1-4 are rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-11 of U.S. Patent No. 7,045,461 ('461) in view of Japan 2000-204479 (hereinafter '479).

The claims of '461 provide a teaching of a method of electroless plating where an azole-based silane coupling agent, such as an imidazole-silane, containing material is applied to a substrate followed by electroless plating (claims 1) (the Examiner notes that the immersion in activator solution step of present claim 4 is optional) and a pretreatment agent (composition) with the azole-based silane coupling agent is also provided (claim 9). '461 does not provide that the composition is an inkjet printing ink, applied by inkjet printing to form a wiring pattern; but '479 provides that it is known to draw a wiring pattern on a on a substrate. Paragraphs [0001] – [0002], [0009] and [0044]-[0047]. The process includes drawing the desired metal wiring pattern on a substrate by an inkjet process, where a composition containing a silane coupling agent is applied to the substrate in a pattern. Paragraph [0044]. The substrate with the coated silane coupling agent is immersed in activator solution. Paragraphs [0045] and [0026]-[0027] (using palladium chloride system, for example, to activate for chemical plating.). Then chemical plating of the substrate with a metal occurs. Paragraph [0046]. The composition of silane is in a solution to be plated by the ink jet printer, thus forming an "ink" of the composition. See paragraph [0044] (composition in an "ink tank"). '479 teaches that an amino-based silane is used, but that other silane coupling agents can be used as well. Paragraph [0023]. It would have been obvious to modify '461 to provide

that the silane based coupling agent is provided in the form of an ink jet ink and applied to form a wiring pattern by inkjet printing to allow for desirable use of the material when forming metal wiring patterns as described by '479 as being a desirable use for silane coupling agents applied as a pretreatment before metal overplating.

9. Claims 1-4 are rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-14 of U.S. Patent No. 7,179,741 ('741) in view of Japan 2000-204479 (hereinafter '479).

The claims of '741 provide a teaching of a method of electroless plating where an azole-based silane coupling agent, such as an imidazole-silane, containing material is applied to a substrate, followed by coating with palladium compound (activator), followed by electroless plating (claims 1, 7) and a pretreatment agent (composition) with the azole-based silane coupling agent is also provided (from the composition described in the process of claims 1, 7). '741 does not provide that the composition is an inkjet printing ink, applied by inkjet printing to form a wiring pattern; but '479 provides that it is known to draw a wiring pattern on a substrate. Paragraphs [0001] – [0002], [0009] and [0044]–[0047]. The process includes drawing the desired metal wiring pattern on a substrate by an inkjet process, where a composition containing a silane coupling agent is applied to the substrate in a pattern. Paragraph [0044]. The substrate with the coated silane coupling agent is immersed in activator solution. Paragraphs [0045] and [0026]–[0027] (using palladium chloride system, for example, to activate for

chemical plating.). Then chemical plating of the substrate with a metal occurs.

Paragraph [0046]. The composition of silane is in a solution to be plated by the ink jet printer, thus forming an “ink” of the composition. See paragraph [0044] (composition in an “ink tank”). ‘479 teaches that an amino-based silane is used, but that other silane coupling agents can be used as well. Paragraph [0023]. It would have been obvious to modify ‘741 to provide that the silane based coupling agent is provided in the form of an ink jet ink and applied to form a wiring pattern by inkjet printing to allow for desirable use of the material when forming metal wiring patterns as described by ‘479 as being a desirable use for silane coupling agents applied as a pretreatment before metal overplating.

10. Claims 1-4 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-6 of copending Application No. 10/558,172 (‘172) in view of Japan 2000-204479 (hereinafter ‘479).

The claims of ‘172 provide a teaching of a method of electroless plating where an azole-based silane coupling agent, such as an imidazole-silane, containing material is applied to a substrate, followed by coating with palladium compound (activator), followed by electroless plating (claims 1, 3, 4, 5) and a pretreatment agent (composition) with the azole-based silane coupling agent is also provided (from the composition described in the process of claims 1, 3, 4, 5). ‘172 does not provide that the composition is an inkjet printing ink, applied by inkjet printing to form a wiring pattern; but ‘479

provides that it is known to draw a wiring pattern on a on a substrate. Paragraphs [0001] – [0002], [0009] and [0044]–[0047]. The process includes drawing the desired metal wiring pattern on a substrate by an inkjet process, where a composition containing a silane coupling agent is applied to the substrate in a pattern. Paragraph [0044]. The substrate with the coated silane coupling agent is immersed in activator solution. Paragraphs [0045] and [0026]–[0027] (using palladium chloride system, for example, to activate for chemical plating.). Then chemical plating of the substrate with a metal occurs. Paragraph [0046]. The composition of silane is in a solution to be plated by the ink jet printer, thus forming an “ink” of the composition. See paragraph [0044] (composition in an “ink tank”). ‘479 teaches that an amino-based silane is used, but that other silane coupling agents can be used as well. Paragraph [0023]. It would have been obvious to modify ‘172 to provide that the silane based coupling agent is provided in the form of an ink jet ink and applied to form a wiring pattern by inkjet printing to allow for desirable use of the material when forming metal wiring patterns as described by ‘479 as being a desirable use for silane coupling agents applied as a pretreatment before metal overplating.

This is a provisional obviousness-type double patenting rejection.

11. Claims 1-4 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-10 of copending Application No. 10/586,379 (‘379) in view of Japan 2000-204479 (hereinafter ‘479).

The claims of '379 provide a teaching of a method of electroless plating where an azole-based silane coupling agent, such as an imidazole-silane, containing material is applied to a substrate by inkjet application, followed by electroless plating (claims 1-4 and 7-9) (the Examiner notes that the activator application step of present claim 4 is optional) and a ink composition with the azole-based silane coupling agent is also provided (from the composition described in the process of claims 1-4 and 7). '379 does not provide that the composition is an inkjet printing ink, applied by inkjet printing to form a wiring pattern; but '479 provides that it is known to draw a wiring pattern on a substrate. Paragraphs [0001] – [0002], [0009] and [0044]–[0047]. The process includes drawing the desired metal wiring pattern on a substrate by an inkjet process, where a composition containing a silane coupling agent is applied to the substrate in a pattern. Paragraph [0044]. The substrate with the coated silane coupling agent is immersed in activator solution. Paragraphs [0045] and [0026]–[0027] (using palladium chloride system, for example, to activate for chemical plating.). Then chemical plating of the substrate with a metal occurs. Paragraph [0046]. The composition of silane is in a solution to be plated by the ink jet printer, thus forming an “ink” of the composition. See paragraph [0044] (composition in an “ink tank”). '479 teaches that an amino-based silane is used, but that other silane coupling agents can be used as well. Paragraph [0023]. It would have been obvious to modify '379 to provide that the silane based coupling agent is provided in the form of an ink jet ink and applied to form a wiring pattern by inkjet printing to allow for desirable use of the material when forming metal

wiring patterns as described by '479 as being a desirable use for silane coupling agents applied as a pretreatment before metal overplating.

This is a provisional obviousness-type double patenting rejection.

12. Claims 1-4 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-11 of copending Application No. 11/795,355 ('355) in view of Japan 2000-204479 (hereinafter '479).

The claims of '355 provide a teaching of a method of electroless plating where an azole-based silane coupling agent, such as an imidazole-silane, containing material is applied to a substrate, followed by electroless plating (claim 7) (the Examiner notes that the activator application step of present claim 4 is optional) and a pretreatment agent (composition) with the azole-based silane coupling agent is also provided (from the composition described in the process of claim 7). '355 does not provide that the composition is an inkjet printing ink, applied by inkjet printing to form a wiring pattern; but '479 provides that it is known to draw a wiring pattern on a substrate. Paragraphs [0001] – [0002], [0009] and [0044]–[0047]. The process includes drawing the desired metal wiring pattern on a substrate by an inkjet process, where a composition containing a silane coupling agent is applied to the substrate in a pattern. Paragraph [0044]. The substrate with the coated silane coupling agent is immersed in activator solution. Paragraphs [0045] and [0026]–[0027] (using palladium chloride system, for example, to activate for chemical plating.). Then chemical plating of the substrate with

a metal occurs. Paragraph [0046]. The composition of silane is in a solution to be plated by the ink jet printer, thus forming an "ink" of the composition. See paragraph [0044] (composition in an "ink tank"). '479 teaches that an amino-based silane is used, but that other silane coupling agents can be used as well. Paragraph [0023]. It would have been obvious to modify '355 to provide that the silane based coupling agent is provided in the form of an ink jet ink and applied to form a wiring pattern by inkjet printing to allow for desirable use of the material when forming metal wiring patterns as described by '479 as being a desirable use for silane coupling agents applied as a pretreatment before metal overplating.

This is a provisional obviousness-type double patenting rejection.

13. Claims 1-4 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 5-6 of copending Application No. 10/576,230 ('230) in view of Japan 2000-204479 (hereinafter '479) and Korea 2000-0076067 (hereinafter '067).

The claims of '230 provide a teaching of a method of electroless plating where an silane coupling agent with functional group with metal capturing ability containing material is applied to a substrate, followed by electroless plating (claim 6) (the Examiner notes that the activator application step of present claim 4 is optional) and a pretreatment agent (composition) with the silane coupling agent is also provided (from the composition described in the process of claim 6). '230 does not provide that the

composition is an inkjet printing ink, applied by inkjet printing to form a wiring pattern; and that the silane coupling agent is an imidazolesilane but '479 and '067 provide the suggestion of these features as discussed in paragraph 5 above.

This is a provisional obviousness-type double patenting rejection.

14. Claims 1-4 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-3 of copending Application No. 11/662,046 ('046) in view of Japan 2000-204479 (hereinafter '479) and Korea 2000-0076067 (hereinafter '067).

The claims of '046 provide a teaching of a method of electroless plating where an silane coupling agent with functional group with metal capturing ability containing material is applied to a substrate, followed by electroless plating (claim 3; although a product claim, the method steps are provided by the product by process teaching of the claim) (the Examiner notes that the activator application step of present claim 4 is optional) and a pretreatment agent (composition) with the silane coupling agent is also provided (from the composition described in claim 3). '046 does not provide that the composition is an inkjet printing ink, applied by inkjet printing to form a wiring pattern; and that the silane coupling agent is an imidazolesilane but '479 and '067 provide the suggestion of these features as discussed in paragraph 5 above.

This is a provisional obviousness-type double patenting rejection.

15. The Examiner notes that the US PG PUB of 10/558,172 is US 2006/0233963; the US PG PUB of 10/586,379 is US 2008/0014362; the US PG PUB of 11/795,355 is US 2008/0138629; the US PG PUB of 10/576,230 is US 2007/0071904; the US PG PUB of 11/662,046 is US 2007/0269680.

### *Conclusion*

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Katherine A. Bareford whose telephone number is (571) 272-1413. The examiner can normally be reached on M-F(6:00-3:30) First Friday Off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Timothy H. Meeks can be reached on (571) 272-1423. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Katherine A. Bareford/  
Primary Examiner, Art Unit 1792